CLAIMS

What is claimed is:

1. A method for preparing submicron sized particles of an organic compound, the solubility of which is greater in a water-miscible first solvent than in a second solvent which is aqueous, the process comprising the steps of:

(i) dissolving the organic compound in the water-miscible first solvent to form a solution, the first solvent being selected from the group consisting of N-methyl-2-pyrrolidinone, 2-pyrrolidone, dimethyl sulfoxide, dimethylacetamide, lactic acid, methanol, ethanol, isopropanol, 3-pentanol, n-propanol, glycerol, butylene glycol, ethylene glycol, propylene glycol, mono- and diacylated monoglycerides, dimethyl isosorbide, acetone, dimethylformamide, 1,4-dioxane, polyethylene glycol, polyethylene glycol esters, polyethylene glycol sorbitans, polyethylene glycol monoalkyl ethers, polypropylene glycol, polypropylene alginate, PPG-10 butanediol, PPG-10 methyl glucose ether, PPG-20 methyl glucose ether, PPG-15 stearyl ether, propylene glycol dicaprylate, propylene glycol dicaprate, propylene glycol laurate;

(ii) mixing into the solution a first surface modifier selected from the group consisting of: anionic surfactants, cationic surfactants and nonionic surfactants;

(iii) mixing into the second solvent a second surface modifier to define a second solution, the second surface modifier selected from the group consisting of: anionic surfactants, cationic surfactants and nonionic surfactants; and

(iv) mixing the first solution with the second solution to define a pre-suspension.

2. The method of claim 1 further comprising the step of mixing into the second solution a phospholipid.

3. The method of claim 2 wherein the phospholipid is selected from natural phospholipids and synthetic phospholipids.

4. The method of claim 2 wherein the phospholipid is selected from the group consisting of: phosphatidylcholine, phosphatidylethanolamine, phosphatidylserine, phosphatidylinositol, phosphatidylglycerol, phosphatidic acid, lysophospholipids, egg phospholipid and soybean phospholipid.

5. The method of claim 1 wherein the nonionic surfactant is selected from the group consisting of: polyoxyethylene fatty alcohol ethers, sorbitan fatty acid esters, polyoxyethylene fatty acid esters, sorbitan esters, glycerol monostearate, polyethylene

glycols, cetyl alcohol, cetostearyl alcohol, stearyl alcohol, poloxamers, polaxamines, methylcellulose, hydroxycellulose, hydroxy propylcellulose, hydroxy propylmethylcellulose, noncrystalline cellulose, polyvinyl alcohol, polyvinylpyrrolidone, and phospholipids.

6. The method of claim 1 wherein the anionic surfactant is selected from the group consisting of: potassium laurate, triethanolamine stearate, sodium lauryl sulfate, sodium dodecylsulfate, alkyl polyoxyethylene sulfates, sodium alginate, dioctyl sodium sulfosuccinate, phosphatidyl glycerol, phosphatidyl inositol, phosphatidylserine, phosphatidic acid and their salts, glyceryl esters, sodium carboxymethylcellulose, bile acids and their salts and calcium carboxymethylcellulose.

7. The method of claim 1 wherein the cationic surfactants are selected from the group consisting of quaternary ammonium compounds, benzalkonium chloride, cetyltrimethylammonium bromide, chitosans and lauryldimethylbenzylammonium chloride.

8. The method of claim 1 wherein the first solvent is N-methyl-2-pyrrolidinone.

9. The method of claim 8 wherein the first surface modifier is a copolymer of oxyethylene oxide and oxypropylene.

10. The method of claim 9 wherein the copolymer of oxyethylene and oxypropylene is a block copolymer.

11. The method of claim 1 further comprising the step of removing the solvent and excess surfactant from the presuspension to provide particles.

12. The method of claim 11solvent and surfactant removal step is accomplished by a method selected from the group of centrifugation, diafiltration, force-field fractionation, and high-pressure filtration.

13. The method of claim 11 wherein the step of solvent and surfactant removal is followed by a step of adding to the particles a diluent to define a third solution.

14. The method of claim 13 wherein the diluent is water.

15. The method of claim 14 wherein the diluent contains a phospholipid.

16. The method of claim 13 wherein the step of adding diluent is followed by the step of subjecting the third solution to high-shear mixing.

17. The method of claim 16 wherein the step of high-shear mixing is

accomplished by a method selected from the group consisting of sonication, homogenization, counter current flow homogenization or microfluidization.